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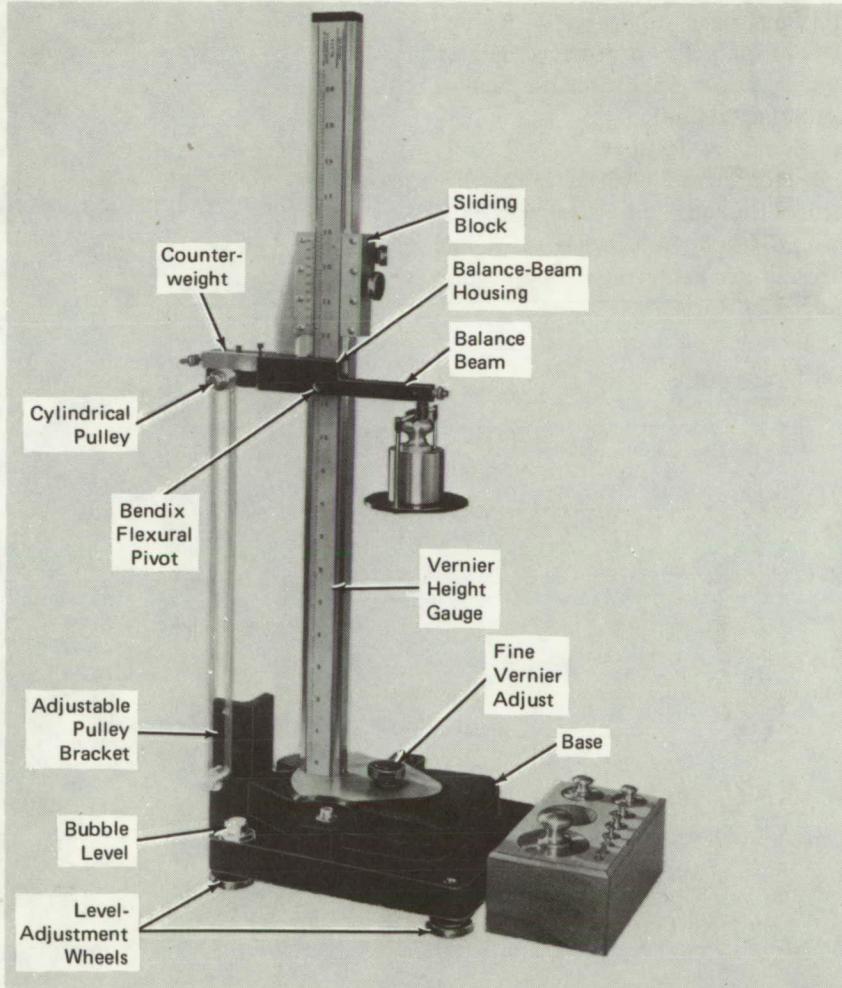
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Instrument for Measuring Thin-Film Belt Lengths

The problem:

Many tape-recorder drive systems have no provision for tension adjustment of the thin-film drive belts. As a result, the belt lengths selected must be very precise.

Measurement devices for the drive-belts vary from one tape-recorder manufacturer to another. To date, none of these measuring instruments has been marketed.



An Instrument for Measurement of Thin-Film Belt Lengths Under Various Loads

(continued overleaf)

The solution:

A portable instrument has been developed for the accurate measurement of thin-film belt lengths under various loads. The instrument is accurate to within 0.001 inch (0.025 mm) and is suitable for commercial production.

How it's done:

As shown in the figure, the instrument consists of a base, a vernier height gauge, a sliding block, and a balance-beam assembly with tension weight. The base firmly supports the vernier height gauge and is provided with a bubble level, two level-adjustment wheels, and the vernier adjustment. The base also supports an adjustable pulley bracket. The pulley bracket is provided with three pulley mounting holes, 4 inches (10 cm) apart, to accommodate widely different belt lengths.

The balance-beam assembly consists of the balance-beam housing, attached rigidly to an arm of a sliding block, and a balance beam suspended pivotally within the housing by a Bendix flexural pivot. One end of the beam is provided with a removable weight tray; the other end is provided with a cylindrical pulley, a fixed counterweight, and a fine-balance adjust screw. The end of the beam adjacent to the pulley is provided with an alignment mark, which aligns with a corresponding mark on the housing during calibration.

This design offers several new features:

1. By employing a Bendix flexural pivot on the balance beam, error caused by frictional loss is near zero.
2. Any belt between 6.4 and 42.3 inches (16.3 and 107.4 cm) may be measured easily; slight modification will accommodate longer belts.

3. Standard easily changed weights are employed, up to 2 pounds (0.9 kg).
4. Standard technique is used to read belt lengths from the height-gauge scales.
5. Belts can be changed quickly for production testing.
6. Calibration of the instrument does not require additional equipment.
7. Finally, the lower pulley can be moved to three positions without recalibration, to accommodate larger or smaller belt lengths.

Notes:

1. This instrument may be of interest to tape-recorder manufacturers and manufacturers of thin-film belts.
2. Requests for further information may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: TSP73-10455

Patent status:

NASA has decided not to apply for a patent.

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(NPO-13149)